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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,120	09/08/2003	John G. Maneatis	TCU 327	9692

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EXAMINER
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SHINGLETON, MICHAEL B

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

10/658,120

Applicant(s)

MANEATIS, JOHN G.

Examiner

Michael B. Shingleton

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 6-20,34-45 and 47-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-20,34-45 and 56-61 is/are allowed.
- 6) ☒ Claim(s) 47-55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

*Michael B. Shingleton*  
**MICHAEL B SHINGLETON**  
**PRIMARY EXAMINER**  
**ART UNIT 2817**

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 47-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillig 5,424,689 (Gillig).

Figure 4-7 and the relevant text of Gillig discloses a fast-locking phase locked loop (pll) system and method of modifying an output signal (OUTPUT SIGNAL) in a PLL having a voltage controlled oscillator (VCO) 423, a reference signal source 401, a low current charge pump 411 and a high current charge pump (Unmarked in figure 4). Being that the device of Gillig is a PLL, the current charge pumps contained therein clearly controls the phase and frequency of the output signal i.e. a certain frequency will have a certain phase. The low current charge pump is the charge pump that is the "run-time" charge pump for it operates when the high current pump is no longer active and it is this charge pump that maintains the lock condition of the PLL (See the paragraph bridging columns 3 and 4 of Gillig.). This passage of Gillig also recites that the "high" current charge pump is of a larger magnitude than the "low" current charge pump. The high current charge pump is also sometimes called the "additional charge pump" by applicant in some of the claims of the instant application. Gillig also clearly shows and discloses that the error detector is the phase detector 405 and the cycle slip detector is the combination of the phase detector and the dead zone circuit 413 of Gillig. The passage bridging columns 3 and 4 noted above makes it clear that the dead zone circuit only works when the error is large, i.e. a complete cycle of the first periodic input signal (reference source.) has occurred within a current cycle of the second periodic input signal (The fed back signal applied to the error detector in Gillig.). Thus Gillig clearly meets the limitation of a "cycle slip detector". When lock is obtained then the charge pump 280 does not function as in applicant's invention. The high current charge pump source clearly makes the pll of Gillig achieve lock "fast" as compared to the pll that does not have the high current source for the bandwidth is widened by charging the capacitors that set the input voltage for the VCO at a faster rate. As noted above since the high current charge pump source does not work all the time like the low current charge pump

source the functional language "that the additional charge pump is activated less often than the run-time charge pump" is clearly met. Some of the claims recites that the additional charge pump is activated "only during startup of the phase-locked loop system or recovery of the phase locked loop system from a dormant state." When one looks to the specification one broadest reasonable interpretation would be that these times set forth in claims like this are defined by the detection of a "cycle slippage" and a system not in lock would be considered to be a dormant state (See MPEP 2111). Thus since Gillig detects a "cycle slippage" as meant by applicant, the additional charge pump of Gillig is activated "only during startup of the phase-locked loop system or recovery of the phase locked loop system from a dormant state." This is what applicant apparently means by a recovery from a dormant state and startup. Also the conductor line 415 of Gillig would be considered to be "an enable line" as meant by applicant as set forth in at least claim 33 for given the lack of a specific definition by applicant the broadest reasonable interpretation would be any line that enables the device it is connected to. As the paragraph bridging columns 3 and 4 of Gillig makes clear the signal 415 when not present disables the high current charge pump and thus this is an enable line that causes the cycle slip detector of Gillig to be operatively coupled with the higher-current charge pump via the enable line. This signal is also called an "activating signal" in some of the claims. A signal that activates a circuit is a signal that enables the circuit. Note that the VCO produces an output signal. While the phase frequency detector of Gillig does not specifically mention a up output and a down output there must be an up output to tell the charge pump to charge up the capacitor that is input to the VCO and there must be a down output to tell the charge pump to discharge the capacitor connected to the VCO. At the very least it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a U and D output so as to charge and discharge a capacitor connected to a VCO because as the Gillig reference is silent on the exact phase frequency detector/charge pump circuit one of ordinary skill in the art would have been motivated to use any art-recognized equivalent phase frequency detector/charge pump including one that has both an up output and a down output to tell the charge pump to charge or discharge a capacitor connected to the input of the VCO as is conventionally known in the art.

New claims 47-55 have been added that recites that the only is active when the reference and feedback signals deviate by more than one full cycle and the thus the higher current source (additional charge pump) is only active when the reference and feedback signals deviate by more than one full cycle. This is merely the selection of a result effective variable or optimum range of values, i.e. how sensitive the deadzone circuit 413 is when it turns off the additional charge pump determines if the VCO will overshoot the target or lock frequency and determines how fast the lock will be. For example if the

deadzone circuit turns off the additional charge pump for a difference of four cycles then the PLL would take longer to lock. Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to select the point at which the deadzone circuit of Gillig turns off the additional charge pump to be when the the reference and feedback signals deviate by more than one full cycle, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105, USPQ 233.

As to the charge pump controller/charge pump being prevented from exceeding an overshoot magnitude or to select the additional charge pump to have substantially the overshoot magnitude or an order of magnitude greater than the run-time charge pump or the charge pump current value is related to the value of the bias current inside the voltage controlled oscillator (charge pump current is derived from a bias current inside the voltage controlled oscillator), this too is the selection of the optimum or workable range for the system. Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to select the maximum charge pump value to be less than the overshoot magnitude and to select the additional charge pump magnitude to be substantially equal to the overshoot magnitude and to select the additional charge pump magnitude to be an order of magnitude greater than the run-time charge pump and to select the charge pump current to be a charge pump current value that is related to the value of the bias current inside the voltage controlled oscillator, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105, USPQ 233.

Claims 6-20, 34-45 and 56-61 are allowable over the art of record.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is (571) 272-1770.

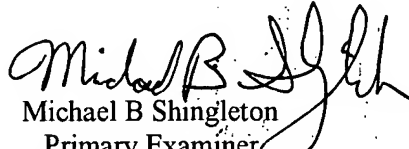
Art Unit: 2817

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (571)272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306 and after July 15, 2005 the fax number will be 571-273-8300. Note that old fax number (703-872-9306) will be service until September 15, 2005.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MBS

December 10, 2005

  
Michael B Shingleton  
Primary Examiner  
Group Art Unit 2817